Geographic Coordinate Data Base

Coverage Format

Description Document

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GCDB Coverage Format
Description Document

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GCDB Coverage Format
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1.0 Introduction

The GCDB Coverage Format is the BLM standard for GCDB Geographic Information System (GIS) coverages. The format was developed - and is maintained - by technical users representing the BLM Cadastral Program. GIS specialists are encouraged to utilize the GCDB Coverage Format, whenever feasible, in the creation of GIS products that are based on GCDB data.

The GCDB Coverage Format is currently a living document. That is, the standard is periodically updated to stay current with the technological changes in GCDB. This particular version of the coverage format is current as of September 2000. The next revisions to the format are expected to be incorporated in January 2001. The changes should be minimal.

The GCDB Data Prep software adheres to the GCDB Coverage Format, so GCDB flat files converted to coverages using Data Prep will automatically match the BLM standard. The GCDB coverages are created using ARC/INFO technology. However, other software tools are equipped to read and view the coverages.

The source data used in these coverages are the official survey records and corresponding geodetic control information. Spatial features including surveyed lines and control points become records in the coverage tables. Unique identifiers, maintained by ARC/INFO, provide the link between the spatial information that locates the feature and the attribute information that describes the feature. This document describes the coverage tables and attributes.

The GCDB Coverage Format Guide is presented in three (3) sections.

- • Section 1   Introduction describes the document.
- • Section 2   GCDB Township Coverages defines the tabular structures for the created ARC/INFO coverages.
- • Section 3   Translation to the Cadastral Data Transfer Profile provides a cross-walk between the attribute items making up the Cadastral Data Content Standard and the items created by the GCDB Data Prep processes.

2.0 GCDB Township Coverages

2.0.1 Why Three Coverages Are Needed For The GCDB Download Site

The GCDB input text files contain survey lines and points that describe survey types and land descriptions for areas within a township, including Pricipal Meridian, State, Township and Range, and Sections. Incorporation of GCDB points into a GIS format is dependent upon the geo-relational model used by Arc/INFO. The geo-relational model enforces a single label point within any one polygon. As a result, areas that have multiple label points will not be represented in the GCDB Coverage.

The Control Points and Label Points coverages are included with the GCDB coverage to ensure all data is completely represented. The Control coverage contains only those points that are used as control points. The Label Points coverage contains a complete graphical representation of the GCDB files including all label points and survey lines. The GCDB coverage contains the region features (township, section, and quarter) with a single label point connected to land description attributes that relate specifically to that point.

2.0.2 GCDB Township Coverages

Township coverages are stored in sub-directories under the $GCDB_COVERAGES directory. The township directory name is constructed from the 2 letter state code, 2 digit principal meridian code, and tier/range codes (for example: nm23t0320n0050w for Township 32N Range 5Wfirst duplicate of the NM Principal Meridian). The following coverages are created by the GCDB Data Prep processes;

Name	Spatial Features	ARC/INFO Feature Class
CTRL	Control Points	Points
LABELS_GCDB	Area points, Survey lines	Points, Arcs, and Nodes
GCDB	Land areas, Survey lines	Polygons, Regions, Arcs, Nodes, and Labels

2.0.3 Control Points Coverage

The CTRL coverage is created from GCDB input files (e.g., *township.con*) stored under the $GCDB_CONV_IN township directory. The CTRL coverage is a point coverage that contains control locations for the specified township. Control point features are described by elements such as a point identifier, elevation and reliability measurements. The control points are provided in a separate coverage for easy identification.

2.0.4 Label Points Coverage

The LABELS_GCDB coverage is created from GCDB input files containing point and line (e.g., **an***township* (point), **lx***township* (lines)) stored under the $GCDB_CONV_IN township directory. Each record in the GCDB input label (point) file is represented as a discrete point feature in the LABELS_GCDB coverage. Each record in the input survey line files, excluding duplicate lines (i.e., lines with the same end points), is represented by a discrete line feature in the LABELS_GCDB coverage. The LABELS_GCDB coverage contains label (point) and survey line features that provide land descriptions for a given area. The LABELS_GCDB coverage provides the basis for the GCDB coverage polygon and region topology.

2.0.5 GCDB Coverage

Label point features in the LABELS_GCDB coverage are overlaid with polygons in the GCDB coverage to support the aggregation of polygons into **Township**, **Section** and **Quarter** region features. The base polygons in the GCDB coverage have no inherent meaning of their own, rather they form the building blocks for the different region subclasses. The GCDB Coverage is a region coverage with the following three region subclasses;

> * **Township** - contains a single feature whose spatial extent is that of the township. Descriptive information includes the State, Principal Meridian and Township.
> * **Section** - contains features that represent the sections within the township. Each feature is described by the section number.
> * **Quarter** - contains features that represent quarter subdivisions of the sections. Features are attributed with a two-letter, directional code describing the quarter.

In addition to region features, the GCDB coverage also contains arcs that represent the survey lines used to define the areal features. Arcs are stored as two point segments and are described by such attributes as length and type. Locations, reliabilities and elevation for the arc endpoints are stored and maintained as node features in the GCDB coverage.
lq25n12w

2.0.6 GCDB Arc/INFO Export (Interchange) Files

After a Township file has been successfully converted, topo-checked, it's coverage edited and saved, the user selects "Export E00" button from the DCSS interface to convert the coverage to an Arc/INFO export or interchange file format. Arc/INFO export files are binary files that allow easy transfer of coverage data. Each of the three township coverages are converted to export files and typically have an "*.e00" extension (e.g., co06t0330s0630w_gcdb.e00, co06t0330s0630w_ctl.e00, and co06t0330s0630w_lbl.e00). During the download process from the GCDB Download site, the three export files are zipped together and delivered to the client machine.

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2.1 Definitions of Table Headings, Table Suffixes and Item Types

2.1.1 Table Headings

COL   Starting position within the record for the item that follows.
ITEM NAME   Name of the data field.
WIDTH   Internal storage width of the item.
OUTPUT   Output width of the item.
TYPE   Item type.
N.DEC   Number of decimal places.
A/I   Item generated by Arc/Info.

2.1.2 Table Suffixes

Spatial features are managed by ARC/INFO in database tables that associate coordinate data with attribute information. Listed below are the table name extensions that correspond to the features stored in the table. Standard items, those maintained by ARC/INFO are also listed. The italic references, *cover* and *subclass,* are generic references to the coverage and subclass name, respectively.

.PAT   **Point** Attribute Table
                       Standard items: Area, Perimeter, *cover#*, *cover*-id

.PAT   **Polygon** Attribute Table
                       Standard items: Area, Perimeter, *cover#*, *cover*-id

        Note: Point features are simply polygon features with zero dimension (I.e. no area or perimeter). The area and perimeter fields are set to zero for point features, thus distinguishing them from polygon features.

.PAT<subclass>   Region Subclass Attribute Table
                       Standard items: Area, Perimeter, *subclass#, subclass-id*
.AAT   **Arc** Attribute Table
                       Standard Items: FNODE#, TNODE#, LPOLY#, RPOLY#, Length, *cover#*,
cover-id

.NAT   Node Attribute Table
                       Standard Items: ARC#, *cover#*, *cover*-id

2.1.3 Item Types Used in GCDB Coverages

B(Binary)   1-4 byte integer item. No decimal positions allowed.
C(Character)   Character field.
F(Floating)   Number stored in floating-point format.
I(Integer)   1-16 byte integer item. No decimal positions are allowed.
N(Number)   Number with decimal places.

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2.2 Coverage Tables

2.2.1 CONTROL POINT ATTRIBUTES (ctrl.pat)

COL	ITEM NAME	WIDTH	OUTPUT	TYPE	N.DEC	A/I	DESCRIPTION
1	AREA	8	18	F	5	Y	Not used.
9	PERIMETER	8	18	F	5	Y	Not used.
17	CTRL#	4	5	B	-	Y	Internal control point ID.
21	CTRL-ID	4	5	B	-	Y	User control point ID.
25	ELEV	9	9	N	3	N	Elevation.in feet.
34	ERROR_N	4	4	I	-	N	Northing error in feet.(GMM). Average reliability (PCCS).
38	ERROR_E	5	5	I	-	N	Easting error in feet (GMM). Maximum reliability (PCCS).
42	POINT_ID	6	6	C	-	N	Control Point/Station ID.
48	X-COORD	14	14	N	9	N	Longitude in decimal degrees.
62	Y-COORD	14	14	N	9	N	Latitude in decimal degrees.
76	AVAIL_FLAG	1	1	C	-	N	Flag indicating that this control point is available, but was not actually used for control purposes (Y/N).

2.2.2 LABEL ATTRIBUTES (labels_gcdb.pat)

COL	ITEM NAME	WIDTH	OUTPUT	TYPE	N.DEC	A/I	DESCRIPTION
1	AREA	8	18	F	5	Y	Not used.
9	PERIMETER	8	18	F	5	Y	Not used.
17	LABELS_GCDB#	4	5	B	-	Y	Internal label point ID.
21	LABELS_GCDB-ID	4	5	B	-	Y	User label point ID.
25	SEC_NO	3	3	C	-	N	Section number.
28	SEC_FRAC	1	1	C	-	N	Not used - Reserved for future use. Section fractional code. (Blank) = full section. 1 = 1/4 2 = 1/2 3 = 3/4
29	SEC_DUP	1	1	C	-	N	Not used - Reserved for future use. (Blank) = not duplicate A = First duplicate (second occurrence of same section number. B = Second duplicate (third occurrence of same section number.
30	NOMINAL_LOCATION	5	5	C	-	N	Nominal location (A-Q).
31	QUARTER	2	2	C	-	N	Quarter section (NE, NW, SE, SW).
33	SURVEY_TYPE	1	1	C	-	N	Survey type (A,B,C,D,E,G,H,I,J,K,L,M,N,O,P,Q, R,S,T,U,W,X,Y,Z).
34	SURVEY_NUMBER	5	5	C	-	N	Survey number.
39	SURVEY_SUFFIX	2	2	C	-	N	Survey suffix.
41	SURVEY_NOTE	3	3	C	-	N	Survey note.
44	ACREAGE	9	9	C	-	N	Acreage.
53	CONFLICT_CD	2	2	C	-	N	Conflict code. (Not used - reserved for future use).
55	PRINMER_CD	2	2	C	-	N	Principal meridian code.
57	TIER_NO	3	3	C	-	N	Tier number.
60	TIER_FRAC	1	1	C	-	N	Tier fractional code 0 = Not a fractional tier. 1 = 1/4 Tier. 2 = 1/2 Tier. 3 = 3/4 Tier.
61	TIER_DIR_CD	1	1	C	-	N	Tier direction code (N,S).

62	RANGE_NO	3	3	C	-	N	Range number.
65	RANGE_FRAC	1	1	C	-	N	Range fractional code. 0 = Not a fractional range. 1 = 1/4 Range. 2 = 1 /2 Range. 3 = 3/4 Range.
66	RANGE_DIR_CD	1	1	C	-	N	Range direction code (E,W).
67	TOWNSHIP_DUP_CD	1	1	C	-	N	Township duplicate code. (Blank) = Not a duplicate township. A = First duplicate (second occurrence of same township). B = Second duplicate (third occurrence of same township).
68	LATITUDE	14	14	N	9	N	Latitude of label point in decimal degrees.
82	LONGITUDE	14	14	N	9	N	Longitude of label point in decimal degrees.

2.2.3 NODE ATTRIBUTES (gcdb.nat)

COL	ITEM NAME	WIDTH	OUTPUT	TYPE	N.DEC	A/I	DESCRIPTION
1	ARC#	4	5	B	-	Y	Internal arc number corresponding to the node.
5	GCDB#	4	5	B	-	Y	Internal node ID.
9	GCDB-ID	4	5	B	-	Y	User node ID.
13	ELEV	9	9	N	2	N	Elevation.
22	ERROR_N	4	4	I	-	N	Northing error in feet.(GMM). Average reliability (PCCS).
26	ERROR_E	5	5	I	-	N	Easting error in feet (GMM). Maximum reliability (PCCS).
30	LINE_CNT	3	3	I	-	N	Line count.
33	LINE_TYPE	2	2	I	-	N	Line type (0 = Section/Township/Special survey line 1 = 20 chain line 2 = 40 chain line 3 = 60 chain line 4 = Blank line)
35	LINE_PEN	2	2	I	-	N	Pen command.
37	LX_SEC	1	1	I	-	N	Not used.
38	POINT_ID	6	6	C	-	N	Station/Point ID.
44	X-UTM-ST	11	11	N	2	N	X coordinate in UTM, State Plane, or map inches..
55	Y-UTM-ST	11	11	N	2	N	Y coordinate in UTM, State Plane, or map inches..
66	X-COORD	14	14	N	9	N	Longitude in decimal degrees.
80	Y-COORD	14	14	N	9	N	Latitude in decimal degrees.
94	SYM_VALUE	3	3	I	-	N	Symbol value for node.

2.2.4 ARC ATTRIBUTES (gcdb.aat)

COL	ITEM NAME	WIDTH	OUTPUT	TYPE	N.DEC	A/I	DESCRIPTION
1	FNODE#	4	5	B	-	Y	Internal number of the from- node.
5	TNODE#	4	5	B	-	Y	Internal number of the to-node
9	LPOLY#	4	5	B	-	Y	Left polygon number.
13	RPOLY#	4	5	B	-	Y	Right polygon number.
17	LENGTH	8	18	F	5	Y	Length of arc.
25	GCDB#	4	5	B	-	Y	Internal Arc ID.
29	GCDB-ID	4	5	B	-	Y	User Arc ID.
33	TYPE	6	6	I	-	N	Line type.
39	SYMBOL	6	6	I	-	N	Line symbol.
45	ORIG_ARC	4	5	B	-	N	Original arc flag.
49	DANGLE_FLAG	4	4	C	-	N	Dangle flag.

2.2.5 ARC ATTRIBUTES (for tangent, circular, and spiral curves - gcdb.aat)

COL	ITEM NAME	WIDTH	OUTPUT	TYPE	N.DEC	A/I	DESCRIPTION
1	FNODE#	4	5	B	-	Y	Internal number of the from- node.
5	TNODE#	4	5	B	-	Y	Internal number of the to-node.
9	LPOLY#	4	5	B	-	Y	Left polygon number.
13	RPOLY#	4	5	B	-	Y	Right polygon number.
17	LENGTH	8	18	F	5	Y	Length of arc.
25	GCDB#	4	5	B	-	Y	Internal Arc ID.
29	GCDB-ID	4	5	B	-	Y	User Arc ID.
33	ANGLE	10	10	C	-	Y	The chord direction of circular curves and spirals.
43	DISTANCE	8	8	C	-	Y	The chord distance of circular curves and spirals.
51	RADIUS	8	8	C	-	Y	The circular curve radius or the first radius of a spiral.
59	DELTA	10	10	C	-	Y	The delta angle of a circular curve or spiral.
69	TANGENT	8	8	C	-	Y	The tangent length of a circular curve or the first tangent length of a spiral.
77	ARCLENGTH	8	8	C	-	Y	The arc length of a circular curve or spiral.
85	SIDE	1	1	C	-	Y	The side where the radius point (for curves) or radius points (for spirals) are located with respect to circular curve or spiral (to the right or to the left of the circular curve or spiral).
86	RADIUS2	8	8	C	-	Y	The second radius of a spiral. TANGENT2 is the second tangent length of a spiral.
94	TANGENT2	8	8	C	-	Y	The second tangent length of a spiral.
102	TYPE	6	6	I	-	N	Line type.
108	SYMBOL	6	6	I	-	N	Line symbol.
114	ORIG_ARC	4	5	B	-	N	Original arc flag.
118	DANGLE_FLAG	4	4	C	-	N	Dangle flag.

2.2.6 POLYGON ATTRIBUTES (gcdb.pat)

COL	ITEM NAME	WIDTH	OUTPUT	TYPE	N.DEC	A/I	DESCRIPTION
1	AREA	8	18	F	5	Y	Area of polygon.
9	PERIMETER	8	18	F	5	Y	Perimeter of polygon.
17	GCDB#	4	5	B	-	Y	Internal polygon ID.
21	GCDB-ID	4	5	B	-	Y	User polygon ID.
25	SEC_NO	3	3	C	-	N	Section number.
28	SEC_FRAC	1	1	C	-	N	Not used - Reserved for future use. Section fractional code. (Blank) = full section. 1 = 1/4 2 = 1/2 3 = 3/4
29	SEC_DUP	1	1	C	-	N	Not used - Reserved for future use. (Blank) = not duplicate A = First duplicate (second occurrence of same section number. B = Second duplicate (third occurrence of same section number.
30	NOMINAL_LOCATION	5	5	C	-	N	Nominal location (A-Q).
35	QUARTER	2	2	C	-	N	Quarter section (NE, NW, SE, SW).
37	SURVEY_TYPE	1	1	C	-	N	Survey type (A,B,C,D,E,G,H,I,J,K,L,M,N,O,P,Q, R,S,T,U,W,X,Y,Z)
38	SURVEY_NUMBER	5	5	C	-	N	Survey number.
43	SURVEY_SUFFIX	2	2	C	-	N	Survey suffix.
45	SURVEY_NOTE	3	3	C	-	N	Survey note.
48	ACREAGE	9	9	C	-	N	Acreage.
57	CONFLICT_CD	2	2	C	-	N	Conflict code .(Not used - reserved for future use).
59	STATE_CD	2	2	C	-	N	State Code
61	PRINMER_CD	2	2	C	-	N	Principal meridian code.
63	TIER_NO	3	3	C	-	N	Tier number.

66	TIER_FRAC	1	1	C	-	N	Tier fractional code 0 = Not a fractional tier. 1 = 1/4 Tier. 2 = 1/2 Tier. 3 = 3/4 Tier.
67	TIER_DIR_CD	1	1	C	-	N	Tier direction code (N,S).
68	RANGE_NO	3	3	C	-	N	Range number.
71	RANGE_FRAC	1	1	C	-	N	Range fractional code. 0 = Not a fractional range. 1 = 1/4 Range. 2 = 1 /2 Range. 3 = 3/4 Range.
72	RANGE_DIR_CD	1	1	C	-	N	Range direction code (E,W).
73	TOWNSHIP_DUP_CD	1	1	C	-	N	Township duplicate code. (Blank) = Not a duplicate township. A = First duplicate (second occurrence of same township). B = Second duplicate (third occurrence of same township).
74	LATITUDE	14	14	N	9	N	Latitude of label point in decimal degrees.
88	LONGITUDE	14	14	N	9	N	Longitude of label point in decimal degrees.

2.2.7 REGION ATTRIBUTES

SUBCLASS TWP (gcdb.pattwp)

COL	ITEM NAME	WIDTH	OUTPUT	TYPE	N.DEC	A/I	DESCRIPTION
1	AREA	8	18	F	5	Y	Area of region.
9	PERIMETER	8	18	F	5	Y	Perimeter of region.
17	TWP#	4	5	B	-	Y	Internal region ID.
21	TWP-ID	4	5	B	-	Y	User region ID.
25	STATE_CD	2	2	C	-	N	Two letter state code.
27	PRINMER_CD	2	2	C	-	N	Principal meridian code.
29	TIER_NO	3	3	C	-	N	Tier number.
32	TIER_FRAC	1	1	C	-	N	Tier fractional code 0 = Not a fractional tier. 1 = 1/4 Tier. 2 = 1/2 Tier. 3 = 3/4 Tier.
33	TIER_DIR_CD	1	1	C	-	N	Tier direction code (N,S).
34	RANGE_NO	3	3	C	-	N	Range number.
37	RANGE_FRAC	1	1	C	-	N	Range fractional code. 0 = Not a fractional range. 1 = 1/4 Range. 2 = 1 /2 Range. 3 = 3/4 Range.
38	RANGE_DIR_CD	1	1	C	-	N	Range direction code (E,W).
39	TOWNSHIP_DUP_CD	1	1	C	-	N	Township duplicate code. (Blank) = Not a duplicate township. A = First duplicate (second occurrence of same township). B = Second duplicate (third occurrence of same township).
	REDEFINED ITEMS						
25	TOWNSHIP	15	15	C	-	N	State, Principal Meridian, Township and Range.

SUBCLASS SECT (gcdb.patsect)

CO L	ITEM NAME	WIDTH	OUTPUT	TYPE	N.DEC	A/I	DESCRIPTION
1	AREA	8	18	F	5	Y	Area of region.
9	PERIMETER	8	18	F	5	Y	Perimeter of region.
17	SECT#	4	5	B	-	Y	Internal region ID.
21	SECT-ID	4	5	B	-	Y	User region ID.
25	STATE_CD	2	2	C	-	N	Two letter state code.
27	PRINMER_CD	2	2	C	-	N	Principal meridian code.
29	TIER_NO	3	3	C	-	N	Tier number.
32	TIER_FRAC	1	1	C	-	N	Tier fractional code 0 = Not a fractional tier. 1 = 1/4 Tier. 2 = 1/2 Tier. 3 = 3/4 Tier.
33	TIER_DIR_CD	1	1	C	-	N	Tier direction code (N,S).
34	RANGE_NO	3	3	C	-	N	Range number.
37	RANGE_FRAC	1	1	C	-	N	Range fractional code. 0 = Not a fractional range. 1 = 1/4 Range. 2 = 1 /2 Range. 3 = 3/4 Range.
38	RANGE_DIR_CD	1	1	C	-	N	Range direction code (E,W).
39	TOWNSHIP_DUP_CD	1	1	C	-	N	Township duplicate code. (Blank) = Not a duplicate township. A = First duplicate (second occurrence of same township). B = Second duplicate (third occurrence of same township).
40	SECTION	3	3	C	-	N	Section number.
	REDEFINED ITEMS						
25	TOWNSHIP	15	15	C	-	N	State, Principal Meridian, Township and Range.

SUBCLASS QTR (gcdb.patqtr)

COL	ITEM NAME	WIDTH	OUTPUT	TYPE	N.DEC	A/I	DESCRIPTION
1	AREA	8	18	F	5	Y	Area of region.
9	PERIMETER	8	18	F	5	Y	Perimeter of region.
17	QTR#	4	5	B	-	Y	Internal region ID.
21	QTR-ID	4	5	B	-	Y	User region ID.
25	STATE_CD	2	2	C	-	N	Two letter state code.
27	PRINMER_CD	2	2	C	-	N	Principal meridian code.
29	TIER_NO	3	3	C	-	N	Tier number.
32	TIER_FRAC	1	1	C	-	N	Tier fractional code 0 = Not a fractional tier. 1 = 1/4 Tier. 2 = 1/2 Tier. 3 = 3/4 Tier.
33	TIER_DIR_CD	1	1	C	-	N	Tier direction code (N,S).
34	RANGE_NO	3	3	C	-	N	Range number.
37	RANGE_FRAC	1	1	C	-	N	Range fractional code. 0 = Not a fractional range. 1 = 1/4 Range. 2 = 1 /2 Range. 3 = 3/4 Range.
38	RANGE_DIR_CD	1	1	C	-	N	Range direction code (E,W).
39	TOWNSHIP_DUP_CD	1	1	C	-	N	Township duplicate code. (Blank) = Not a duplicate township. A = First duplicate (second occurrence of same township). B = Second duplicate (third occurrence of same township).
40	QUARTER	2	2	C	-	N	Quarter (NE,NW,SW,SE).
	REDEFINED ITEMS						
25	TOWNSHIP	15	15	C	-	N	State, Principal Meridian, Township and Range.

2.3 Coverage Table Examples

2.3.1 CTRL.PAT

```
AREA            =        0.00000
PERIMETER          =         0.00000
CTRL#           =    9
CTRL-ID          =     9
ELEV           =   6000.00
ERROR_N           =   40
ERROR_E           =   40
POINT_ID         = 300600
X-COORD          = -106.594455556
Y-COORD          =   43.542048056
AVAIL_FLAG          = Y
```

2.3.2 LABELS_GCDB.PAT

```
AREA            =        0.00000
PERIMETER          =         0.00000
LABELS_GCDB#         =    2
LABELS_GCDB-ID        =    2
SEC_NO          = 001
SEC_FRAC         =
SEC_DUP          =
NOMINAL_LOCATION       = D
QUARTER          = NE
SURVEY_TYPE        = A
SURVEY_NUMBER         =
SURVEY_SUFFIX        =
SURVEY_NOTE          =
ACREAGE          = 40.000
CONFLICT_CD         =
PRINMER_CD          = 06
TIER_NO          = 041
TIER_FRAC         = 0
TIER_DIR_CD         = N
RANGE_NO          = 081
RANGE_FRAC         = 0
RANGE_DIR_CD         = W
TOWNSHIP_DUP_CD        =
LATITUDE         =   43.551183306
LONGITUDE          =   106.518346750
```

2.3.3 GCDB.NAT

```
ARC#             =    1
GCDB#            =    2
GCDB-ID          =    2
ELEV             =  6000.00
ERROR_N          = 214
ERROR_E          = 455
LINE_CNT         = 24
LINE_TYPE        = 3
LINE_PEN         = 4
LX_SEC           = 0
POINT_ID         = 660700
X-UTM-ST         =  377159.88
Y-UTM-ST         =  4823531.82
X-COORD          = -106.520832806
Y-COORD          =  43.556570000
SYM_VALUE        = 122
```

2.3.4 GCDB.AAT

```
FNODE#           =    4
TNODE#           =    3
LPOLY#           =    1
RPOLY#           =    4
LENGTH           =        0.00498
GCDB#            =    3
GCDB-ID          = 1456
TYPE             =    0
SYMBOL           =   11
ORIG_ARC         = 1456
DANGLE_FLAG      = 0
```

2.3.5 GCDB.AAT (with cogo attributes for curves)

```
FNODE#           =  577
TNODE#           =  572
LPOLY#           =    0
RPOLY#           =    0
LENGTH           =       37.37700
GCDB#            = 1149
GCDB-ID          = 1149
ANGLE            = N17-22-20E
DISTANCE         = 35.50
RADIUS           = 33.61
DELTA            = 63-45-12
TANGENT          = 20.90
ARCLENGTH        = 37.40
SIDE             = L
RADIUS2          =
TANGENT2         =
TYPE             =    0
SYMBOL           =   14
ORIG_ARC         =    0
DANGLE_FLAG      =
```

2.3.6 GCDB.PAT

```
AREA               =        0.00002
PERIMETER          =        0.01713
GCDB#              =    2
GCDB-ID            =    525
SEC_NO             = 001
SEC_FRAC           =
SEC_DUP            =
NOMINAL_LOCATION       = A
QUARTER            =
SURVEY_TYPE        = L
SURVEY_NUMBER      = 1
SURVEY_SUFFIX      =
SURVEY_NOTE        =
ACREAGE            = 40.000
CONFLICT_CD        =
STATE_CD           = WY
PRINMER_CD         = 06
TIER_NO            = 041
TIER_FRAC          = 0
TIER_DIR_CD        = N
RANGE_NO           = 081
RANGE_FRAC         = 0RANGE_DIR_CD
TOWNSHIP_DUP_CD        =
LATITUDE           =   43.554781111
LONGITUDE          =   106.518345028
```

2.3.7 GCDB.PATTWP

```
AREA               =        0.01008
PERIMETER          =        0.43709
TWP#               =    2
TWP-ID             =    2
STATE_CD           = WY
PRINMER_CD         = 06
TIER_NO            = 041
TIER_FRAC          = 0
TIER_DIR_CD        = N
RANGE_NO           = 081
RANGE_FRAC         = 0
RANGE_DIR_CD       = W
TOWNSHIP_DUP_CD        =
```

2.3.8 GCDB.PATSECT

```
AREA              =  0.00027
PERIMETER         =        0.07174
SECT#             =   6
SECT-ID           =   6
STATE_CD          = WY
PRINMER_CD        = 06
TIER_NO           = 041
TIER_FRAC         = 0
TIER_DIR_CD       = N
RANGE_NO          = 081
RANGE_FRAC        = 0
RANGE_DIR_CD      = W
TOWNSHIP_DUP_CD   =
SECTION           = 003
```

2.3.9 GCDB.PATQTR

```
AREA              = 0.00212
PERIMETER         =        1.12177
QTR#              =   2
QTR-ID            =   2
STATE_CD          = WY
PRINMER_CD        = 06
TIER_NO           = 041
TIER_FRAC         = 0
TIER_DIR_CD       = N
RANGE_NO          = 081
RANGE_FRAC        = 0
RANGE_DIR_CD      = W
TOWNSHIP_DUP_CD   =
QUARTER           = NW
```

3.0 Translation to the Cadastral Data Transfer Profile
for the National Spatial Data Infrastructure

3.0.1 CONTROL POINT ATTRIBUTES (ctrl.pat)

ARC/INFO ITEM NAME	NSDI TABLE	NSDI ITEM NAME
AREA	N/A	N/A
PERIMETER	N/A	N/A
CTRL#	N/A	N/A
CTRL-ID	N/A	N/A
ELEV	TWN.COORDS	ELEV
ERROR_N	TWN.COORDS	YACC *
ERROR_E	TWN.COORDS	XACC *
POINT_ID	TWN.LACORN	CORNNO **
X-COORD	TWN.COORDS	EAST
Y-COORD	TWN.COORDS	NORTH
AVAIL_FLAG	N/A	N/A

 * Different methods may be used to define reliability. GMM records the error in feet for each location, while PCCS records an average reliability.

** GCDB Coverage Format utilizes a 6 character point-id value. NSDI uses a three-character corner number.

3.0.2 LABEL ATTRIBUTES (labels_gcdb.pat)

ARC/INFO ITEM NAME	NSDI TABLE	NSDI ITEM NAME
AREA	N/A	N/A
PERIMETER	N/A	N/A
LABELS_GCDB#	N/A	N/A
LABELS_GCDB-ID	N/A	N/A
SEC_NO	TWN.FIRST	SECTN
SEC_FRAC	TWN.FIRST	SECTN
SEC_DUP	TWN.FIRST	FRSTSF
NOMINAL_LOCATION	N/A	N/A
QUARTER	TWN.SECOND	QSECTN
SURVEY_TYPE	TWN.SURDES	SURSYS
SURVEY_NUMBER	TWN.SURDES	SURNUM
SURVEY_SUFFIX	TWN.SURDES	SURNUM
SURVEY_NOTE	TWN.SURDES	SURNUM
ACREAGE	TWN.PARARA	PARAR
CONFLICT_CODE	N/A	N/A
PRINMER_CD	UNDEFINED	UNDEFINED
TIER_NO	TWN.TWNSHP	TOWN
TIER_FRAC	TWN.TWNSHP	TWNFRT
TIER_DIR_CD	TWN.TWNSHP	TWNDIR
RANGE_NO	TWN.TWNSHP	RANGE
RANGE_FRAC	TWN.TWNSHP	RNGFRT
RANGE_DIR_CD	TWN.TWNSHP	RNGDIR
TOWNSHIP_DUP_CD	TWN.TWNSHP	TWNDUP
LATITUDE	N/A	N/A
LONGITUDE	N/A	N/A

3.0.3 NODE ATTRIBUTES (gcdb.nat)

ARC/INFO ITEM NAME	NSDI TABLE	NSDI ITEM NAME
ARC#	N/A	N/A
GCDB#	N/A	N/A
GCDB-ID	N/A	N/A
ELEV	TWN.COORDS	ELEV
ERROR_N	TWN.COORDS	YACC *
ERROR_E	TWN.COORDS	XACC*
LINE_CNT	N/A	N/A
LINE_TYPE	N/A	N/A
LINE_PEN	N/A	N/A
LX_SEC	N/A	N/A
POINT_ID	TWN.COORDS	CORNNO **
X-UTM-ST	N/A	N/A
Y-UTM-ST	N/A	N/A
X-COORD	TWN.COORDS	EAST
Y-COORD	TWN.COORDS	NORTH
SYM_VALUE	N/A	N/A
REDEFINED ITEMS		

* Different methods may be used to define reliability. GMM records the error in feet for each location, while PCCS records an average reliability.

** The GCDB Coverage Format utilizes a 6 character point-id value. NSDI uses a three-character corner number.

3.0.4 ARC ATTRIBUTES (gcdb.aat)

ARC/INFO ITEM NAME	NSDI TABLE	NSDI ITEM NAME
FNODE#	N/A	N/A
TNODE#	N/A	N/A
LPOLY#	N/A	N/A
RPOLY#	N/A	N/A
LENGTH	N/A	N/A
GCDB#	N/A	N/A
GCDB-ID	N/A	N/A
TYPE	N/A	N/A
SYMBOL	N/A	N/A
ORIG_ARC	N/A	N/A
DANGLE_FLAG	N/A	N/A

3.0.5 ARC ATTRIBUTES (gcdb.aat - for tangent, circular and spiral curves)

ARC/INFO ITEM NAME	NSDI TABLE	NSDI ITEM NAME
FNODE#	N/A	N/A
TNODE#	N/A	N/A
LPOLY#	N/A	N/A
RPOLY#	N/A	N/A
LENGTH	N/A	N/A
GCDB#	N/A	N/A
GCDB-ID	N/A	N/A
ANGLE	TWN.CIRCUR	CENANG
DISTANCE	TWN.CIRCUR	LNGCRD
RADIUS	TWN.CIRCUR	RAD
DELTA	TWN.OTHCUR	PARAMETERS
TANGENT	TWN.OTHCUR	PARAMETERS
ARCLENGTH	TWN.OTHCUR	PARAMETERS
SIDE	TWN.OTHCUR	PARAMETERS
RADIUS2	TWN.OTHCUR	PARAMETERS
TANGENT2	TWN.OTHCUR	PARAMETERS
TYPE	N/A	N/A
SYMBOL	N/A	N/A
ORIG_ARC	N/A	N/A
DANGLE_FLAG	N/A	N/A

3.0.6 POLYGON ATTRIBUTES (gcdb.pat)

ARC/INFO ITEM NAME	NSDI TABLE	NSDI ITEM NAME
AREA	N/A	N/A
PERIMETER	N/A	N/A
GCDB#	N/A	N/A
GCDB-ID	N/A	N/A
SEC_NO	TWN.FIRST	SECTN
SEC_FRAC	TWN.FIRST	SECTN
SEC_DUP	TWN.FIRST	FRSTSF
NOMINAL_LOCATION	N/A	N/A
QUARTER	TWN.SECOND	QSECTN
SURVEY_TYPE	TWN.SURDES	SURSYS
SURVEY_NUMBER	TWN.SURDES	SURNUM
SURVEY_SUFFIX	TWN.SURDES	SURNUM
SURVEY_NOTE	TWN.SURDES	SURNUM
ACREAGE	TWN.PARARA	PARAR
CONFLICT_CD	N/A	N/A
STATE_CD	TWN.LADESC	STATE
PRINMER_CD	UNDEFINED	UNDEFINED
TIER_NO	TWN.TWNSHP	TOWN
TIER_FRAC	TWN.TWNSHP	TWNFRT
TIER_DIR_CD	TWN.TWNSHP	TWNDIR
RANGE_NO	TWN.TWNSHP	RANGE
RANGE_FRAC	TWN.TWNSHP	RNGFRT
RANGE_DIR_CD	TWN.TWNSHP	RNGDIR
TOWNSHIP_DUP_CD	TWN.TWNSHP	TWNDUP
LATITUDE	N/A	N/A
LONGITUDE	N/A	N/A

3.0.7 REGION ATTRIBUTES

SUBCLASS TWP (gcdb.pattwp)

ARC/INFO ITEM NAME	NSDI TABLE	NSDI ITEM NAME
AREA	N/A	N/A
PERIMETER	N/A	N/A
TWP#	N/A	N/A
TWP-ID	N/A	N/A
SEC_NO	TWN.FIRST	SECTN
STATE_CD	TWN.LADESC	STATE
PRINMER_CD	UNDEFINED	UNDEFINED
TIER_NO	TWN.TWNSHP	TOWN
TIER_FRAC	TWN.TWNSHP	TWNFRT
TIER_DIR_CD	TWN.TWNSHP	TWNDIR
RANGE_NO	TWN.TWNSHP	RANGE
RANGE_FRAC	TWN.TWNSHP	RNGFRT
RANGE_DIR_CD	TWN.TWNSHP	RNGDIR
TOWNSHIP_DUP_CD	TWN.TWNSHP	TWNDUP
REDEFINED ITEM		
TOWNSHIP	N/A	N/A

SUBCLASS SECT (gcdb.patsect)

ARC/INFO ITEM NAME	NSDI TABLE	NSDI ITEM NAME
AREA	N/A	N/A
PERIMETER	N/A	N/A
SECT#	N/A	N/A
SECT-ID	N/A	N/A
STATE_CD	TWN.LADESC	STATE
PRINMER_CD	UNDEFINED	UNDEFINED
TIER_NO	TWN.TWNSHP	TOWN
TIER_FRAC	TWN.TWNSHP	TWNFRT
TIER_DIR_CD	TWN.TWNSHP	TWNDIR
RANGE_NO	TWN.TWNSHP	RANGE
RANGE_FRAC	TWN.TWNSHP	RNGFRT
RANGE_DIR_CD	TWN.TWNSHP	RNGDIR
TOWNSHIP_DUP_CD	TWN.TWNSHP	TWNDUP
SECTION	TWN.FIRST	SECTN
REDEFINED ITEM		
TOWNSHIP	N/A	N/A

SUBCLASS QTR (gcdb.patqtr)

ARC/INFO ITEM NAME	NSDI TABLE	NSDI ITEM NAME
AREA	N/A	N/A
PERIMETER	N/A	N/A
QTR#	N/A	N/A
QTR-ID	N/A	N/A
STATE_CD	TWN.LADESC	STATE
PRINMER_CD	UNDEFINED	UNDEFINED
TIER_NO	TWN.TWNSHP	TOWN
TIER_FRAC	TWN.TWNSHP	TWNFRT
TIER_DIR_CD	TWN.TWNSHP	TWNDIR
RANGE_NO	TWN.TWNSHP	RANGE
RANGE_FRAC	TWN.TWNSHP	RNGFRT
RANGE_DIR_CD	TWN.TWNSHP	RNGDIR
TOWNSHIP_DUP_CD	TWN.TWNSHP	TWNDUP
QUARTER	TWN.SECOND	SECOND
REDEFINED ITEM		
TOWNSHIP	N/A	N/A

Appendix A: Import Utility for ARC/INFO E00 Files

GCDB coverages are distributed in the ARC/INFO E00 interchange format. In order to use the coverages in a GIS, ARC/INFO or ArcView GIS for example, the E00 files must be converted back to their native coverage format. Both ARC/INFO and ArcView GIS have "import" utilities that support the translation of E00 formats. Common "import" functionality is described below. For complete documentation, please refer to the ARC/INFO and/or ArcView GIS Help Files.

Importing into ARC/INFO

The IMPORT command in ARC/INFO is used to convert E00 files into coverage format. The command is available at the ARC: prompt. The following can be typed at the command prompt to create the GCDB coverage from the nm23t0060n0030e_gcdb.e00 file:

arc: import cover nm23t0060n0030e_gcdb.e00 GCDB

Importing into ArcView GIS

IMPORT71 is a stand-alone program that converts E00 files into a data source in a format that can be added to a project or view in ArcView GIS. ArcView GIS actually ships with two import utilities: IMPORT and IMPORT71. The IMPORT71 utility is recommended because it supports double precision and has no restrictions on the size of the data source.

IMPORT71 appears as a program item in the ArcView program group. To run IMPORT71, double-click the IMPORT71 program item in the ArcView program group. A dialog box is presented with prompts for exported filename and the output data source.

You can also run the program from the MS-DOS prompt, passing the parameters on the command line. The executable is located in the installation bin32 directory. The following example shows how to use IMPORT71 to convert the interchange file C:\nm23t0060n0030e_gcdb.e00 to the coverage C:\GCDB:

C:\ESRI\Av_gis30\Arcview\bin32> IMPORT71 C:\nm23t0060n0030e_gcdb.e00 C:\GCDB